

Shell Tutorial Center

Free Body Diagrams

A FBD is a vector diagram of a body showing the external forces acting on it.

Q: What creates the external forces on a body?

A: Other bodies

Q: What kind of external forces are considered?

A: i. Contact forces (F_N , F_{applied} , Friction)

ii. Non-contact forces (F_g)

Ex: For a body being pushed across a frictionless horizontal floor.

Step 1

Q: What non-contact forces should we consider?

A: F_g (from the earth)

Q: What bodies are in contact with the object?

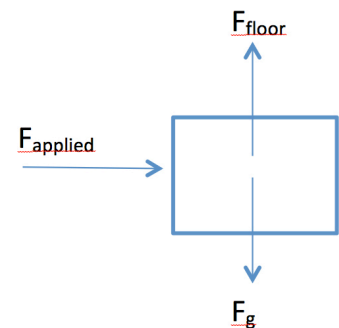
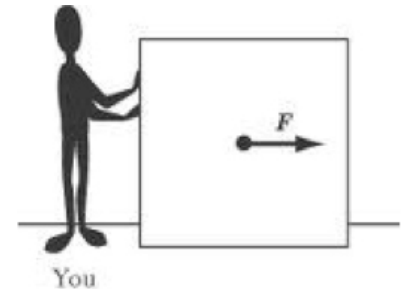
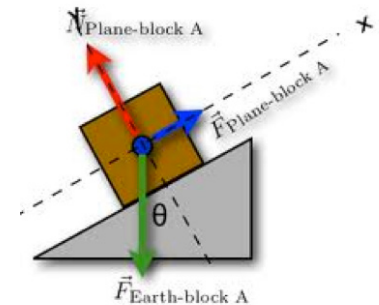
A: You \longrightarrow Applied force, F_{applied}

The floor \longrightarrow F_{floor}

(Note: F_g always points **downward**. In the absence of friction F_{floor} should only act **perpendicular to the floor**.)

Step 2

Sketch the body and show the forces



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